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Seven new species of *Druciatus* Marshall (Diptera; Sphaeroceridae; Limosininae)

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Abstract: *Druciatus nigratarsus* new species is described from St. Vincent, Guyana, Ecuador and Peru, *D. trisetus* new species is described from Ecuador, Brazil and Guyana, *D. dissidens* and *D. latisternus* new species are described from Costa Rica, *D. angustus* new species is described from Mexico, *D. campbelli* new species is described from Guatemala, and *D. petilus* new species is described from Ecuador. A key is provided to the eight species in the genus *Druciatus*.

Introduction

Druciatus is an easily diagnosed, clearly monophyletic group of neotropical Limosininae. *Druciatus* species have a diagnostic combination of strongly cruciate middle interfrontal bristles, small posterior katapisternal bristles, two dorsocentral bristles and the costa which extends far beyond R_{4+5} . The highly distinctive genitalia, especially the flat male cercus with a row of long bristles and the fused epiproct and cerci of the female, are both diagnostic and defining for this group. Other defining characters (synapomorphies) of the genus include the sculptured posteroventral surface of the basiphallus, the characteristic surstyli with sensory pits on anterior and posterior lobes, and the small ocellar triangle.

Virtually all of the specimens available were collected in Malaise traps or flight intercept traps, mostly in low elevation forest. Nothing more is known of the biology of this genus, which is distributed from Mexico and the Caribbean south to Brazil and Peru.

Key to the species of *Druciatus*

- 1). Anteroventral surface of hind basitarsus with dense black setulae. Setulose posteromedial tab of male sternite 5 elongate, bilobed, with two bristles (Fig. 13). Spermathecae barrel-shaped. (Ecuador, Peru, Guyana, St. Vincent) *nigratarsus* new species
- Anteroventral margin of hind basitarsus with sparse, brown or yellow setulae. Posteromedial tab of male sternite 5 broad, or not bilobed, or with more than 2 bristles. Spermathecae of known females tire-shaped 2
- 2) Eye height greater than 3.0X genal height. Posteromedial tab of male sternite 5 bilobed, with 3 or 4 strong bristles on each lobe (Fig. 25) (Ecuador, Guyana, Peru) *trisetus* new species
- Eye height less than 3.0X genal height. Posteromedial tab of male sternite not bilobed, or with only 2 bristles 3
- 3) Posteromedial tab of male sternite 5 broad, weakly bilobed. Epiproct of known females uniformly pale across posterior half, with 4 or more setae. (*latisternus* species complex) 5
- Posteromedial tab of male sternite 5 almost oval or rectangular, not bilobed. Epiproct completely depigmented medially, usually with only 2 setae 4
- 4) Anterior lobe of surstylus as long as posterior lobe; posterior lobe with a large inner bristle. Paramere narrowed apically (Dominican Republic, Dominica) *ovisternus* Marshall
- Anterior lobe of surstylus half as long as posterior lobe; posterior lobe with uniformly small inner setae (Fig. 22). Paramere enlarged apically (Fig. 23). (Ecuador, Venezuela) *petilus* new species
- 5) Paramere short, apically broad (Fig. 10). Surstylus with broad inner bristle at base of posterior lobe; apex of anterior lobe broad. Posteromedial part of male sternite 5 twice as long as sternite

anterior to it (Fig. 12). (Costa Rica)
 *latisternus* new species
 Paramere long and slender or apically tapered.
 Surstylus without broad inner bristle. Postero-
 medial process of male fifth sternite similar in
 length to part of sternite anterior to it 6

- 6) Posterior lobe of surstylus with a large inner bristle,
 anterior lobe curved, with a broad apical spur
 and long, thin apical bristles (Fig. 7). Paramere
 strongly bent (Fig. 9). (Guatemala)
 *campbelli* new species

Posterior lobe of surstylus with only thin setulae on
 inner surface; anterior lobe of surstylus short,
 with only a blunt spur apically 7

- 7) Paramere broad in basal half, tapered distally (Fig.
 8). Anterior lobe of surstylus longer than poste-
 rior lobe, apex broader than base of apical
 bristle; posterior lobe narrower at base than
 apex (Fig. 5). (Costa Rica)
 *dissidens* new species

Paramere narrow, almost parallel-sided in distal
 two-thirds (Fig. 3). Anterior lobe of surstylus
 shorter than posterior lobe, apex equal in width
 to base of apical bristle; posterior lobe parallel-
 sided (Fig. 2). (Mexico)
 *angustus* new species

***Druciatus angustus* Marshall,**
 new species (Figs. 1-4)

Description, male only: Body length *ca.* 2.0mm, colour dark brown, legs, lower frons, and antennae luteous, halter pale brown. Interfrontal area narrow, height 1.3X width. Eye height 2.0X genal height. Acrostichal setulae in 6 rows between anterior dorsocentral bristles. Mid tibia with only minute setulae in midventral region. Anteroventral surface of hind basitarsus with dense golden setulae.

Male terminalia: Sternite 5 with strong bristles along posterior margin, middle part strongly concave, area posterior to concavity with a weakly sclerotized, setulose, weakly bilobed sclerite with two large bristles; posteromedial sclerite subequal in length to sternite 5 anterior to sclerite (similar to Fig. 11). Epandrium with sparse, short setae; cercus flat, strongly demarcated from epandrium, with outer row of 6 very long bristles and loose inner row of *ca.* 5 weaker bristles (Figs. 1, 2). Surstylus with an apically narrow, short anterior lobe, and a broad, setose posterior lobe with only small setulae on medial surface (Fig. 2). Paramere narrow, al-

most parallel-sided in apical 2/3 (Fig. 3). Basiphallus strongly ridged posteriorly (Fig. 4).

Holotype (CNC): MEXICO. Sinaloa, 15miW El Palmito, 5000', 30 July 1964, W.R.M. Mason.

Comments: This species belongs to the difficult complex of four species made up of *latisternus*, *dissidens*, *campbelli* and *angustus*, and is most similar to *dissidens*. *Druciatus angustus* seems indistinguishable from *D. dissidens* on the basis of the male fifth sternite (otherwise diagnostic for species of this genus), but differs markedly from *dissidens* in the shape of the paramere and surstylus.

Etymology: The specific name, from the Latin for narrow, refers both to the narrow paramere and the relatively narrow surstylus.

***Druciatus campbelli* Marshall, new species**
 Figs. 7, 9

Description, male only: Body length *ca.* 2.0mm, colour dark brown, legs, face, lower frons, and antennae pale brown. Interfrontal area narrow, height 1.3X width. Eye height 2.1X genal height. Acrostichal setulae in 6 rows between anterior dorsocentral bristles. Middle tibia of both sexes with only minute setulae in midventral region. Anteroventral setulae of hind basitarsus golden brown.

Male terminalia: Sternite 5 with strong bristles along posterior margin, middle part strongly concave, area posterior to concavity with a weakly sclerotized, setulose, weakly bilobed sclerite with two large bristles (similar to Fig. 11); posteromedial part 0.7X as long as sternite 5 anterior to sclerite. Epandrium with sparse, short setae; cercus flat, strongly demarcated from epandrium, with outer row of 7 very long bristles and *ca.* 16 weaker bristles in a dense cluster inside and below outer row. Surstylus with an apically bent anterior lobe with long, thin apical bristles and a very broad, flat apical spur; posterior lobe of surstylus with a long interior bristle (Fig. 7). Paramere thin, bent almost 90 degrees beyond middle, tapered at apex (Fig. 9). Basiphallus strongly ridged posteriorly.

HOLOTYPE (CNC): GUATEMALA. 5miNE San Lorenzo, 10.vii.1986, flight intercept trap, J.M. Campbell.

Comments: Although superficially similar to the other species in the *latisternus* complex, *D. campbelli* has a distinctive paramere and surstylus.

Etymology: This species is named after the collector, J.M. Campbell, in recognition of his many contributions to the senior author's entomological pursuits.

Druciatus dissidens Marshall, new species
Figs. 5, 8, 11

Description, male only: Body length *ca.* 2.0mm, colour dark brown, legs pale brown, face, and antennae reddish brown. Height of interfrontal area 1.1X width. Eye height 2.0X genal height. Acrostichal setulae in 6 rows between anterior dorsocentral bristles. Mid tibia with a slightly enlarged anteroventral bristle below middle. Anterior surface of hind basitarsus sparsely setose, ventral edge with dense black setulae.

Male terminalia: Sternite 5 with strong bristles along posterior margin, middle part strongly concave, area posterior to concavity with a weakly sclerotized, setulose, weakly bilobed sclerite with two large bristles; posteromedial sclerite similar in length to sternite 5 anterior to sclerite (Fig. 11). Epandrium with sparse, short setae; cercus flat, strongly demarcated from epandrium, with outer row of 6 very long bristles and loose inner row of *ca.* 12 weaker bristles. Surstylus with anterior lobe twice as broad as base of apical bristle; broad, setose posterior lobe with only small setulae on medial surface (Fig. 5). Paramere long, broad basally, strongly tapered to apex (Fig. 8). Basiphallus strongly ridged posteriorly.

Holotype (CNC): COSTA RICA. Monteverde Reserve, 1500m, 15-20.viii.1986, L. Masner (CR-05)

Comments: This species was collected at the same time and place as *D. latisternus*, which it closely resembles. Characters which distinguish *dissidens* from *latisternus* include the short posteromedial lobe of the male sternite 5, the lack of a broad inner bristle on the surstylus, the strongly tapered paramere, and the relatively narrow anterior surstylar arm. The eye size of the only known specimen of this species is smaller than any of the specimens of *latisternus*, but eye size can be variable in this genus.

Etymology: The specific name, from the Latin for "differing", refers to the fact that the type specimen differs from other specimens collected at the same time and place.

Druciatus latisternus Marshall, new species
Figs. 6, 10, 12

Body length *ca.* 2.0mm, colour dark brown, legs, face, lower frons, and antennae pale brown. Interfrontal area narrow, height 1.3X width. Eye height 2.2 - 2.4X genal height. Acrostichal setulae in 6 rows between anterior dorsocentral bristles. Middle tibia of both sexes with only minute setulae in midventral region. Anteroventral setulae of hind basitarsus golden brown, some short black setulae along ventral margin only.

Male terminalia: Sternite 5 with strong bristles along posterior margin, middle part strongly concave, area posterior to concavity with a weakly sclerotized, setulose, weakly bilobed sclerite with two large bristles; posteromedial sclerite longer than sternite 5 anterior to sclerite (Fig. 12). Epandrium with a long posteroventral bristle, otherwise with sparse, short setae; cercus flat, strongly demarcated from epandrium, with outer row of 7 very long bristles and loose inner row of *ca.* 10 weaker bristles. Surstylus with an apically broad, bifid anterior lobe, and a broad, setose posterior lobe with a large interior bristle (Fig. 6). Paramere short, broad, slightly tapered near apex only. Basiphallus strongly ridged posteriorly.

Female terminalia: Tergite 8 narrowed but complete, with a long anteroventral lobe; epiproct fused with cerci, entirely setulose, pale-pigmented medially, with 5 bristles (only available female with 4 well developed bristles and one enlarged setula on right side). Sternite 8 large, strongly convex posteriorly. Sternite 8 narrow, with 4 bristles. Hypoproct narrow. Spermathecae tire-shaped.

Holotype (CNC) and 5 Paratypes (2 [1 with genitalia lost], 2 , CNC): COSTA RICA. Monteverde Reserve, 1500m, 15-20.viii.1986, L. Masner (CR-05). OTHER PARATYPES: COSTA RICA Monteverde Reserve, 1550m, 15-20.vii.1986, L. Masner (2 , GUE).

Etymology: The specific name refers to the wide posteromedial portion of the male sternite 5.

***Druciatus nigratarsus* Marshall, new species**
Figs. 13-19

Body length *ca.* 1.6mm, colour brown, legs, antennae, lower frons, face and stem of halter luteous. Interfrontal area narrow, height 1.5X width. Eye height 2.0-2.5X genal height. Acrostichal setulae in 4-5 rows between anterior dorsocentral bristles. Mid tibia of both sexes with a slightly enlarged anteroventral bristle just below middle. Anteroventral setulae of hind basitarsus dense, black.

Male terminalia: Sternite 5 with strong bristles along posterior margin, middle part strongly concave, with an elongate, setulose, bilobed sclerite in the concavity, sclerite with 1 large medial bristle on each lobe, lobes long and tapered (Fig. 13). Epandrium with sparse, short setae; cercus flat, strongly demarcated from epandrium, with an outer row of 5 very long bristles and 1 or 2 finer bristles (Fig. 14). Surstylus with a long, thin anterior lobe ending in a weakly demarcated spur and a broad posterior lobe; outer surface of posterior lobe bare, distal and inner surfaces short-setose (Fig. 15). Paramere short, broadened and bent anteriorly at apex (Fig. 17). Basiphallus weakly spinulose posteriorly (Fig. 16).

Female terminalia: Tergite 8 narrowed but complete, with lateral ventral part almost uniformly broad; epiproct fused with cerci, entirely setulose, pale-pigmented medially, with 2 - 4 bristles (Fig. 18). Sternite 7 large, strongly convex posteriorly. Sternite 8 small, subquadrate, with 4 bristles (Fig. 19). Hypoproct narrow. Spermathecae barrel-shaped, deeper than wide, with a deep apical invagination.

Holotype (CNC) and 13 paratypes (5♂, 8♀, FSCA, GUE): SAINT VINCENT. Par. St. Andrews, Botanical Garden, Kingstown, 1-3.x.1991, Malaise trap, R.E. Woodruff.

Paratypes: ECUADOR. Napo. Tena, 500m, Malaise trap, tall grass and shrubs near Hotel Auca, 22-27.v.1987, L.D. Coote and B.V. Brown (1, ROM#870014); Pichincha Prov, Rio Palenque Stn., 47kmS Sto Domingo, 29.iv-5.v.1987, L.D. Coote and B.V. Brown, 180m, Malaise trap in primary lowland rain forest (1, GUE). PERU. Rio Tambopata Reserve, 30kmSW Puerto Maldonado, 19.ix-10.x.1984, tropical moist forest, D.A. Grimaldi (1, AMNH); GUYANA. Rupununi Dist, Kurupukari, Essequibo R., 200', Malaise trap in primary rain

forest clearing, 7-11.x.1990, L.D. Coote and B. Hubley (1, ROM#905048).

Etymology: The specific name refers to the dense black setulae of the first tarsomere of the hind leg.

***Druciatus petilus*, new species**
Figs. 20-24

Body length *ca.* 1.8mm, colour uniformly light brown. Interfrontal area narrow, height 1.3X width. Eye height 2.0X genal height. Acrostichal setulae in 5-6 rows between anterior dorsocentral bristles. Anteroventral setulae of hind basitarsus sparse, ventral margin with a few short, black setulae amongst longer golden brown setulae.

Male terminalia: Sternite 5 with strong bristles along posterior margin, middle part strongly concave, with a separate, pale, setulose posteromedial sclerite in the concavity; posteromedial sclerite elongate, almost parallel-sided, with 2 posterior bristles (Fig. 20). Epandrium sparsely setose, setae increasing in length towards posteroventral margin; cercus flat, strongly demarcated from epandrium, with an outer row of 5 very long bristles and an inner ventral patch of several smaller bristles (Fig. 21). Surstylus with a short, thin anterior lobe ending in a weakly demarcated spur; posterior lobe relatively elongate (length 5X basal width), broadened and setose apically, inner surface bare (holotype) or with one thin bristle (Fig. 22). Paramere narrow, expanded apically, anterior lobe not developed (Fig. 23). Basiphallus weakly ridged on posteroventral surface (Fig. 24).

Female unknown.

Holotype (CNC): ECUADOR: Pichincha Prov., 250m, 47kmS Sto. Domingo, Rio Palenque Station, 17-25.ii.1979, Malaise trap, S.A. Marshall.

Paratype: Venezuela: Rancho Grande, Malaise - Intercept, 12-30-xii-1987, M. Sanborne (1♂, GUE)

Other material examined: ECUADOR: Napo Prov., 5kmN El Chaco, 15.ii.1983, Malaise trap and wet net, M.J. Sharkey (1, CNC, badly damaged).

Comments: The specimen from Napo Province is not designated paratype because it differs from the holotype in the following details: eye height 1.4X genal height; interfrontal area relatively broad; surstylus with a slender bristle on inner surface

(Fig. 22); posterior process of sternite 5 slightly tapered as opposed to the parallel-sided process of the holotype. Additional material is needed to determine whether this specimen is indeed conspecific with the holotype.

Etymology: The specific name is from the Latin for narrow, and refers to the long and narrow surstylus.

***Druciatus trisetus* Marshall, new species**

Figs. 25-31

Body length ca. 1.8mm, colour brown, lower frons, face, legs, and stem of halter luteous. Interfrontal area narrow, height 1.5X width. Eye height 3.0 - 3.5X genal height. Acrostichal setulae in 5-6 irregular rows. Mid tibia of both sexes with only small setulae in midventral region. All ventral and anteroventral setulae of hind basitarsus golden brown.

Male terminalia: Sternite 5 with strong bristles along posterior margin, middle part strongly concave, with a separate bilobed sclerite in the concavity, sclerite with 3 or 4 posterior bristles on each lobe (Fig. 25). Epandrium with sparse, short setae; cercus flat, strongly demarcated from epandrium, with row of 6 very long bristles (Fig. 26). Surstylus with a long, thin anterior lobe ending in a weakly demarcated spur and a broad, setose posterior lobe with a large interior bristle (Fig. 27). Paramere narrowed apically, with small anterior lobes and an unusually complicated structure (Fig. 29). Basiphallus ridged posteriorly (Fig. 28).

Female terminalia: Tergite 8 narrowed but complete, with lateral ventral part almost uniformly broad; epiproct fused with cerci, setulose pale-pigmented medially, with 2 bristles (Fig. 30). Sternite 7 large, strongly convex posteriorly. Sternite 8 narrow, with 4 bristles (Fig. 31). Hypoproct narrow. Spermathecae tire-shaped.

Holotype: ECUADOR. Pichincha Prov., Tinalandia, 800m, 2-7.ii.1983, Malaise trap, M. Sharkey, L. Masner (CNC).

Paratypes: BRAZIL: Parana, near Londrina, Mata Dos Godoy, Malaise trap, 28-31.i.1990, S.A. Marshall (1♂, MNRJ). ECUADOR. Pichincha Prov. 47km S Santo Domingo, Rio Palenque, 3.v.-25.vii.1985, 250m., rain forest Malaise-FIT, S&J Peck (1♂, GUE); Rio Palenque, 180m, Malaise trap in lowland rain forest, 29.iv-5.v.1987, L. Coote and B.V. Brown

(1♂, 1♀, GUE); Rio Palenque, 160m, 30.iv-5.v.1987, L. Coote & B. Brown (1, ROM#870002); Rio Palenque, 1-14.vii.1975, A. Forsyth (1, CNC). Napo Prov., Tena, 500m, Malaise trap, tall grass and shrubs near Hotel Auca, 22-27.v.1987, L.D. Coote and B.V. Brown (3, 1, ROM#870014); same, but 21-27.v, secondary rain forest (1♂, 4♀, ROM#870017); Napo, 10kmSW Pto. Napo, Limon Chicta, 23-27.v.1987, 500m, primary rain forest Malaise trap, B.V. Brown and L.D. Coote (1♂, 5♀, GUE); Napo, SW Puerto Napo, S. Limonchicta, S. side Rio Piocullin, 23-27.v.1987, 600m, Malaise trap in primary lowland rain forest, L. Coote and B.V. Brown (1, ROM#870020). GUYANA. Rupununi Dist., 200', Kurupukari, W. side Essequibo Riv., rain forest clearing, Malaise trap, 8-16.x.1990, B. Hubley, L. Coote (1♂, ROM#905062); same, 7-11.x.1990 (1♂, ROM#905048). PERU: Depto. Loreto, 1.5 km N Teniente Lopez, 18-vii-1993, 230-305m, FIT, R. Leschen (2♂, 2♀, GUE).

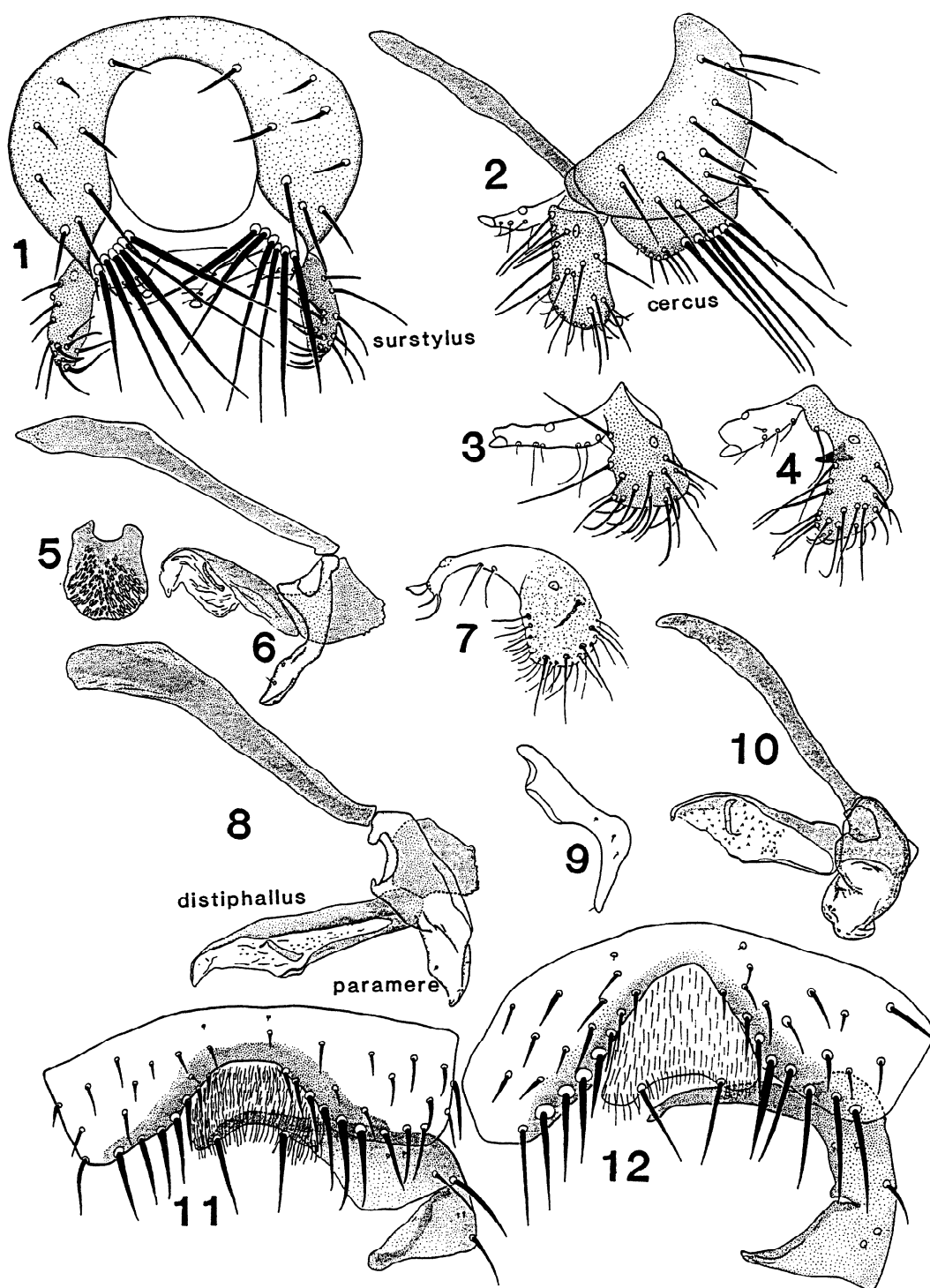
Etymology: The specific name refers to the three setae on each side of the posteromedial portion of sternite 5.

Acknowledgements and collection abbreviations

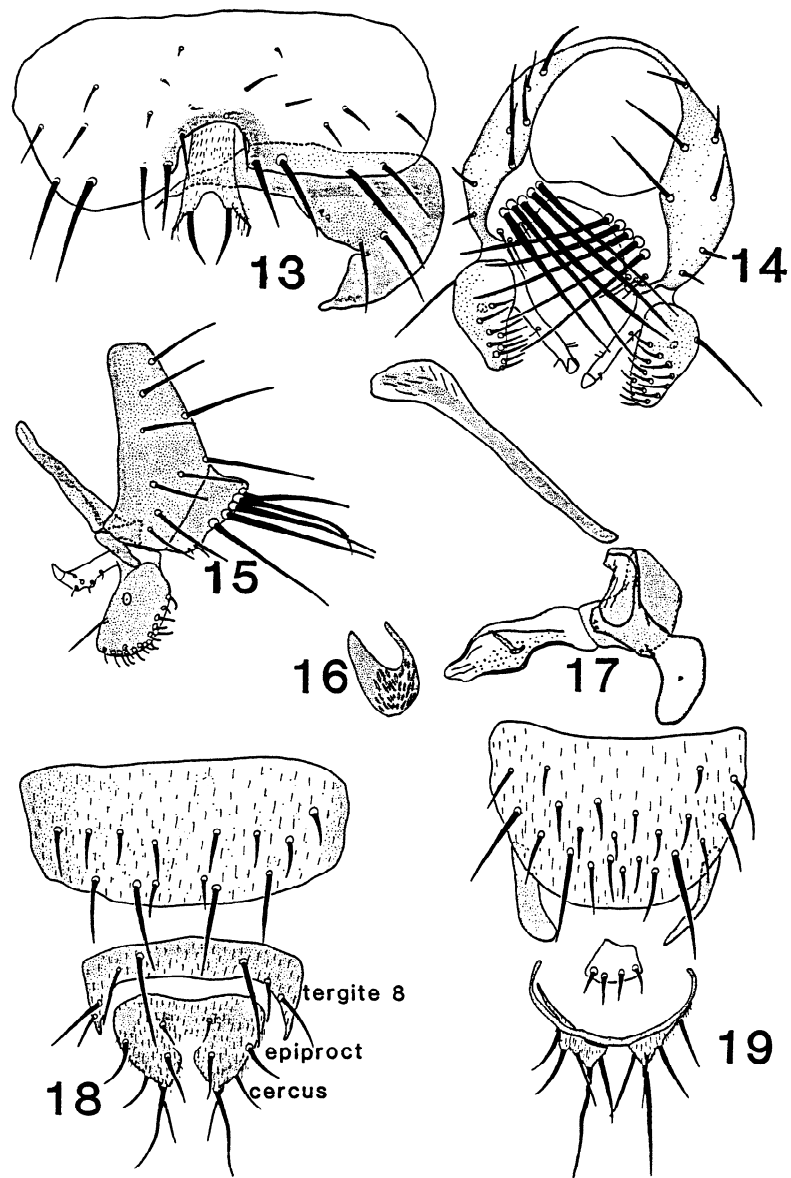
We would like to thank all the collectors and museum curators who allowed us to use their material. All holotypes are deposited in the Canadian National Collection, Ottawa (CNC), paratypes are in the University of Guelph Collection (GUE); the Museu Nacional, Rio de Janeiro (MNRJ); the Florida State Collection of Arthropods (FSCA); the Royal Ontario Museum (ROM), and the United States National Museum (USNM).

References

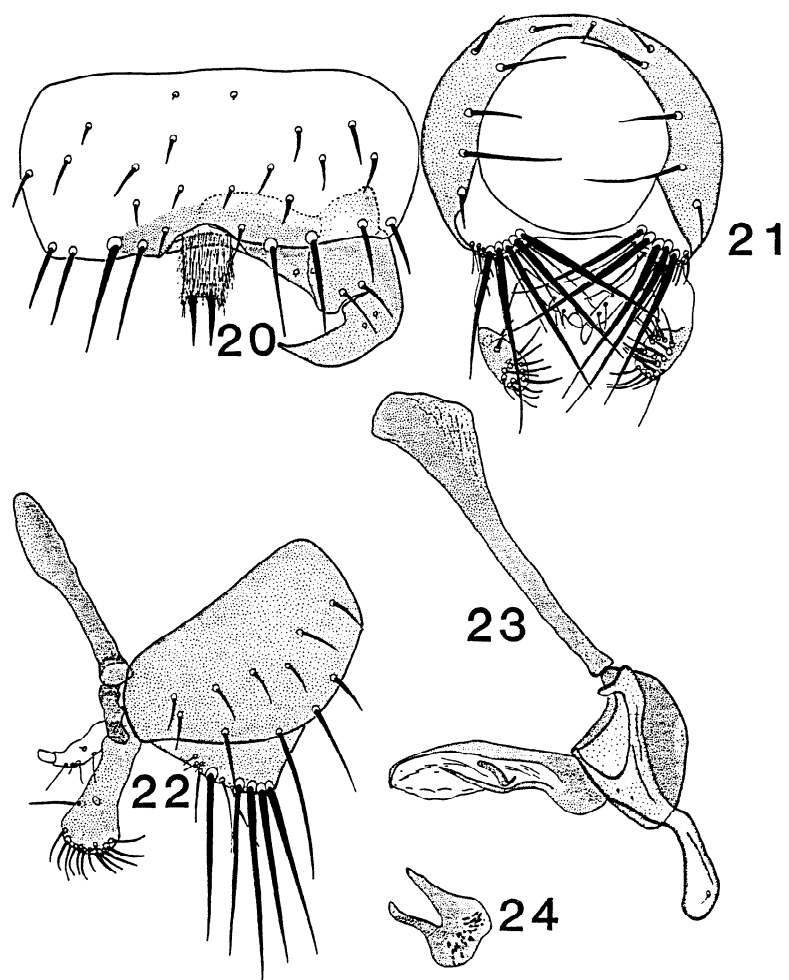
Marshall, S.A. 1995. *Sclerocoelus* and *Druciatus*, new genera of New World Sphaeroceridae (Diptera; Limosininae; Sphaeroceridae). *Insecta Mundi* 9(3-4): 283-289.



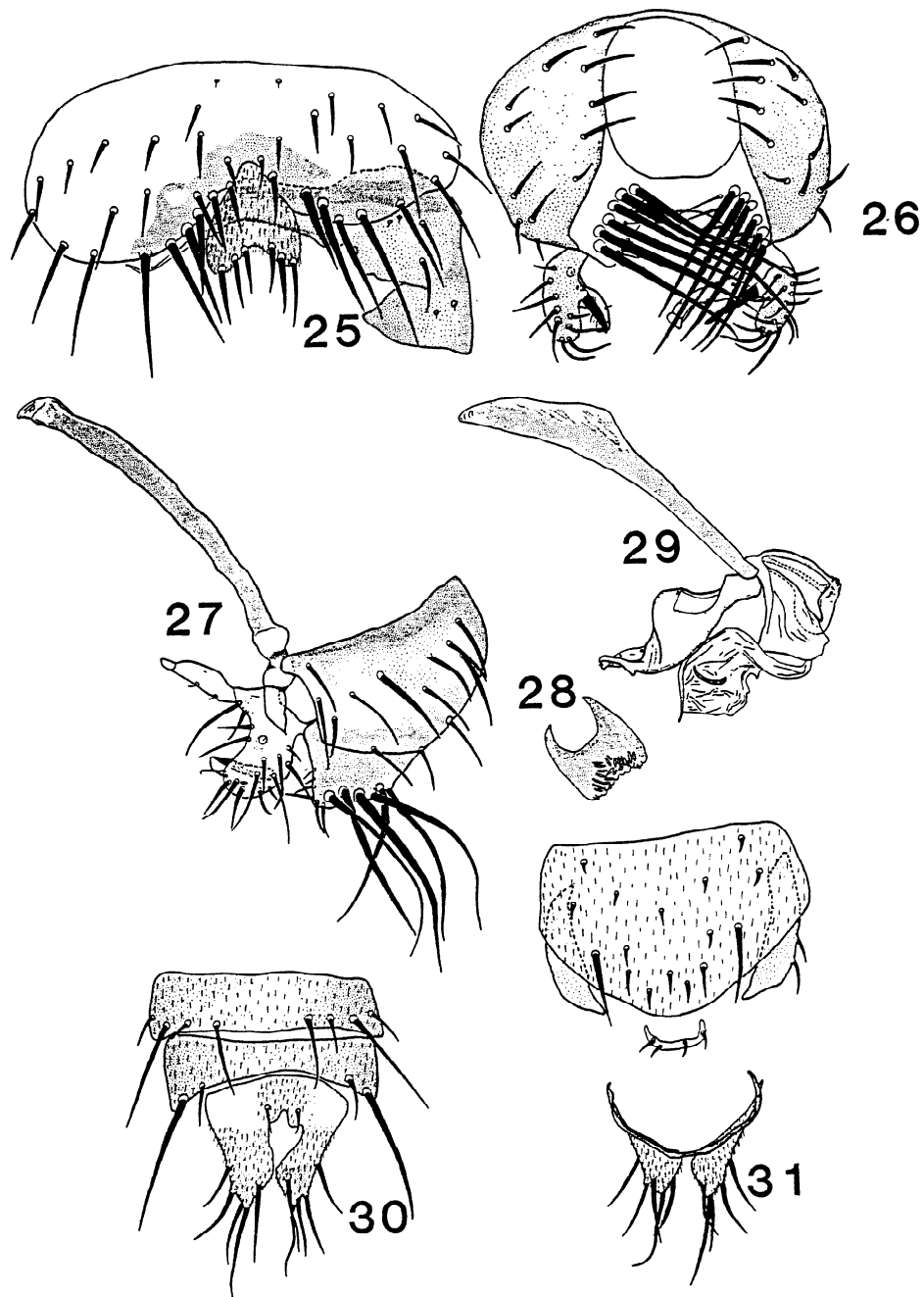
Figs. 1-12: *Druciatus latisternus* complex, male abdominal characters. 1-4, *D. angustus*. 1, terminalia, posterior; 2, terminalia, lateral; 3, aedeagus and associated structures; 4, basiphallus, posteroventral. 5, *D. dissidens*, left surstylus, lateral. 6, *D. latisternus*, left surstylus, lateral. 7, *D. campbelli*, left surstylus, lateral. 8, *D. dissidens*, aedeagus and associated structures. 9, *D. campbelli*, paramere. 10, *D. latisternus*, aedeagus and associated structures. 11, *D. dissidens*, sternites 5-7. 12, *D. latisternus*, sternites 5-7.



Figs. 13-19: *Druciatus nigratarsus*. 13, male sternites 5-7; 14, male terminalia, posterior; 15, male terminalia, lateral; 16, basiphallus, posteroventral; 17, aedeagus and associated structures; 18, female terminalia, dorsal; 19, female terminalia, ventral.



Figs. 20-24: *Druciatus petilus*, male abdominal characters. 20, sternites 5-7; 21, terminalia, posterior; 22, terminalia, lateral; 23, aedeagus and associated structures; 24, basiphallus, posteroventral.



Figs. 25-31: *Druciatus trisetus*. 25, male sternites 5-7; 26, male terminalia, posterior; 27, male terminalia, lateral; 28, basiphallus, posteroventral; 29, aedeagus and associated structures; 30, female terminalia, dorsal; 31, female terminalia, ventral.

